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1998

Online at <https://mpra.ub.uni-muenchen.de/13234/>

MPRA Paper No. 13234, posted 07 Feb 2009 05:56 UTC

## CHAPTER 14

**Too much of a good thing:  
The macroeconomic effects of taxing  
capital inflows**

*Carmen M. Reinhart and R. Todd Smith*

## 14.1 Introduction

In addition to altering fiscal, monetary, and exchange rate policies in response to the surge in international capital inflows in the early 1990s, policy makers in many countries in Asia, Eastern Europe, and Latin America have resorted to measures to control capital inflows. The types of measures used have varied widely across countries; in some cases the capital control took the form of a tax on capital inflows (Brazil, Chile, Colombia, and, more recently, Thailand), and in other instances quantitative restrictions were used (Czech Republic and Malaysia). In a number of countries (Indonesia, Philippines, and Thailand), the controls came in the form of "prudential measures" directed at the domestic financial sector measures to curb banks' offshore borrowing or limit their foreign exchange exposure are examples of this type of policy response. Usually, these "sand-in-the-heel" policies have targeted short-term capital flows, which are perceived to be relatively volatile and destabilizing. Not surprisingly, there is a renewed and considerable debate in academic and policy circles regarding the relative merits and effectiveness of such policies.

Recent policies aimed at curbing capital inflows have most often been thought of as "temporary" measures, either because they have been explicitly announced as such (Malaysia in early 1994), or counter-cyclically - that is, restrictions and taxes are tightened in the heavy inflow phase of the cycle and relaxed as these subsidies are reversed (Brazil and Colombia) - or simply are thought to be

ineffective after a while.<sup>2</sup> Hence, when analyzing the effects of these policies in a theoretical framework, two of their key features must be kept in mind - their temporariness (in the sense that controls are only in place or are binding during a finite horizon) and their asymmetry (in that, unlike a Tobin tax which is applied to *all* transactions, these policies target inflows).<sup>3</sup>

The aims of this chapter are twofold. First, we analyze the macroeconomic effects of a temporary tax on capital inflows in the context of a standard, representative-agent, intertemporal model. The temporariness of controls on inflows is by government design rather than eventual evasion. The emphasis of the analysis is on tracing the effects of this policy on key variables, such as consumption, the real exchange rate, the current account, and capital flows. Second, we review the stylized facts of the periods leading up to and following the imposition of capital controls in several countries in Asia, Eastern Europe, and Latin America, including Brazil, the Czech Republic, Chile, Colombia, and Malaysia. The aim is to assess to what extent these measures were able to achieve their intended goals of influencing the level and composition of capital flows - specifically, whether they were successful in reducing the volume of flows, lengthening their maturity, or both. We also examine the evolution of other key macroeconomic variables around these episodes. Along the way, we discuss the relative merits of such measures, document and chronicle the timing and highly varied nature of the measures that have been implemented, and review the recent literature on the topic, with particular emphasis on a variety of case studies. The main conclusions that emerge from the analytical exercise and from the review of the country experiences can be summarized as follows.

First, in the context of a theoretical model, we show that a temporary tax that increases the cost of borrowing abroad to domestic residents has the intended effect of reducing net cross-border capital flows. It enables the monetary authorities temporarily to keep domestic interest rates above world levels, thus raising the "effective price" of consuming today vis-à-vis consuming at a future date, when the controls are no longer in place. This induces households to postpone consumption; the temporary decline in consumption, in turn, depreciates the real exchange rate and reduces the current account deficit - fulfilling, at least in principle, the intentions of policy makers.

Second, we argue, as shown formally in Reinhart and Smith (1996),

The authors wish to thank Guillermo Calvo, Alberto Carrasquilla, Peter Montić, and Vincent Reinhart for useful discussion, comments, and suggestions.  
1 Calvo, Leiderman, and Reinhart (1993, 1994).

<sup>2</sup> For instance, there is much debate within Chile and Colombia on the current usefulness of the controls. See Lefort and Budnevich (1996), and Valdes-Prieto and Soto (1995).

<sup>3</sup> See Reinhart (1996) for a comparison of the symmetric and asymmetric cases.

that the response to the policy change hinges importantly on the degree of intertemporal substitution and less so on the duration that those controls are in place. Formally, if the intertemporal elasticity of substitution is low as has been found for a number of developing countries (see, for instance, Ostry and Reinhart, 1992, and Reinhart and Vegh, 1995); then our results imply that the tax on inflows would have to be quite high to have the desired macroeconomic effect. Indeed, this observation concurs with the actual policies implemented by a number of countries; for instance, Colombia's reserve requirement rate on offshore borrowing of a maturity of thirty days or less is 140 percent.

Third, in light of the recent experiences of countries that have adopted measures designed to curb short-term capital flows, it appears that at least in the short run, such policies were effective in either reducing the volume of capital inflows, affecting their composition, or both, in a relatively brief period of time. Hence, it could be argued that if the capital inflows are perceived as temporary, such policies can be effective, especially because the reduction in the volume of net inflows reduces potential future outflows and thus the economic costs of such turbulence. This observation must be interpreted cautiously, in that often the controls were part of a larger policy package aimed at reducing capital inflows or lengthening their maturities. For example, the introduction of controls often coincided with increased exchange rate flexibility and the scaling back of sterilized intervention designed to encourage a reduction in domestic interest rates. Hence, it is difficult to isolate the effects of the controls per se.

Fourth, most of the empirical work on the effectiveness of capital controls has tended to conclude that controls lose their effectiveness relatively quickly. However, in most of this work no distinction is made among the "types" of capital controls. Specifically, the distinction is made between measures to discourage inflows and controls on outflows. Indeed there may be reasons to believe that their effectiveness is not symmetric and that controls on inflows may be more effective than controls on outflows. One reason to believe this is that controls on outflows are usually resorted to during balance-of-payments or financial crises. (East Asia provides recent examples.) These episodes are characterized by large devaluations of the exchange rate, steep declines in stock market, increased volatility in financial variables, a higher risk of default, and, in some cases political instability. The imposition of controls in and of itself may send a "signal" that worse times are to come. In such circumstances, spreads of domestic to foreign interest rates usu-

<sup>4</sup> See Bartolini and Drazen (1994) on this issue.

ally react level (particularly on a risk-adjusted basis) that provide a powerful incentive for outflows. In contrast, as the experiences of several countries in the early 1990s shows, controls on inflows tend to emerge under more "normal" economic circumstances. While rate-of-return spreads may still provide an incentive to evade the controls, the rate of return differentials tend to be smaller than those observed during crises and hence the desire to circumvent the controls may not be as strong. Further, from the viewpoint of an international investor, one can always redirect investments to countries where there are less impediments.<sup>5</sup>

The next section discusses the conditions under which controlling capital inflows may be desirable and chronicles the recent use of measures to curb capital inflows, while section 14.3 sketches the main features of a theoretical model and discusses the implications of the controls. Section 14.4 reviews for a range of countries the evolution and composition of capital flows and other macroeconomic variables around the periods when controls are introduced, while the last section discusses policy implications and areas for future research.

#### 14.2 Controlling capital inflows in the 1990s

It is widely agreed that free cross-border movement of capital is a first-best solution in a world where markets function efficiently, prices are fully flexible, and there are no distortions. The rationale for controlling cross-border capital flows therefore usually stems from a variety of reasons that have to do with the presence of distortions, rigidities, and/or market failures (e.g., Tobin, 1978; see Dooley, 1996, for a recent review of the literature). The desire to maintain monetary policy independence in the face of a fixed exchange rate - a rigidity that is the result of an explicit policy - has also served as the motivation for introducing capital controls.<sup>6</sup> At present, the possibility of a sudden reversal of capital inflows is a key policy concern for the many developing countries that rely heavily on foreign capital to finance large current account deficits - and these concerns have intensified in the wake of the Mexican and Asian crises. Despite its policy relevance, however, there does not appear to be consensus (either in academic or policy circles) on the usefulness or desirability of curbing international capital movements by imposing various forms of capital controls and/or prudential regulations. In the remainder of this section, we discuss what types of controls on inflows and on outflows may potentially mitigate the disruptive effects of sharp and

<sup>5</sup> This argument will, of course, not hold if everyone adopts uniform controls.

<sup>6</sup> A recent example is Thailand. See Glick, Hutchison, and Moreno (1995).

that the response to the policy change hinges importantly on the degree of intertemporal substitution and less so on the duration that the controls are in place. Formally, if the intertemporal elasticity of substitution is low as has been found for a number of developing countries (see, for instance, Ostry and Reinhart, 1992, and Reinhart and Vegh, 1995): then our results imply that the tax on inflows would have to be quite high to have the desired macroeconomic effect. Indeed, this observation concurs with the actual policies implemented by a number of countries; for instance, Colombia's reserve requirement rate on offshore borrowing of a maturity of thirty days or less is 140 percent.

Third, in light of the recent experiences of countries that have adopted measures designed to curb short-term capital flows, it appears that at least in the short run, such policies were effective in either reducing the volume of capital inflows, affecting their composition, or both, in a relatively brief period of time. Hence, it could be argued that if the capital inflows are perceived as temporary, such policies can be effective, especially because the reduction in the volume of net inflows reduces potential future outflows and thus the economic costs of such turbulence. This observation must be interpreted cautiously, in that often the controls were part of a larger policy package aimed at reducing capital inflows or lengthening their maturities. For example, the introduction of controls often coincided with increased exchange rate flexibility and the scaling back of sterilized intervention designed to encourage a reduction in domestic interest rates. Hence, it is difficult to isolate the effects of the controls per se.

Fourth, most of the empirical work on the effectiveness of capital controls has tended to conclude that controls lose their effectiveness relatively quickly. However, in most of this work no distinction is made among the "types" of capital controls. Specifically, little distinction is made between measures to discourage inflows and controls on outflows; indeed there may be reasons to believe that their "lack of effectiveness" is not symmetric and that controls on inflows may be more effective than controls on outflows. One reason to believe this is that controls on outflows are usually resorted to during balance-of-payments or financial crises. (East Asia provides recent examples.) These episodes are characterized by large devaluations of the exchange rate, steep declines in stock market, increased volatility in financial variables, a hemorrhage of default, and, in some cases political instability. The imposition of controls in and of itself may send a "signal" that worse times are to come. In such circumstances, spreads of domestic to foreign interest rates USU

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<sup>6</sup> A recent example is Thailand. See Glick, Hutchison, and Moreno (1995).

sudden reversals in international capital flows, reviews the various arguments made as to their relative merits, and chronicles their incidence during the 1990s.

#### 14.2.1. Controlling capital inflows: The pros and cons

Although it is common to label certain types of controls or restrictions on cross-border capital flows as either controls on inflows or outflows, many types of controls are likely to influence *both* inflows and outflows. For example, a ban on the convertibility of the domestic currency, which is intended to curtail outflows, is also likely to make the country less attractive to foreign investors - thus reducing inflows. Similarly, Bartolini and Drazen (1994) and Laban and Larrain (1994) argue that a liberalization of outflows increases foreign investor confidence in that country and may result in higher net inflows. Keeping in mind this link between capital inflows and outflows, it is useful to approach the analysis of alternative capital controls according to whether they are targeted toward inflows or outflows.

Large-scale capital inflows could lead to an overheated economy, an appreciated real exchange rate, and an unsustainable current account deficit; large outflows could produce a recession and a decline in investment which would tend to reduce the medium-term growth prospects. Large flows in either direction also tend to complicate the conduct of monetary policy and, if there are distortions in the financial sector, may increase the fragility of the domestic financial system. In the case of inflows, monetary and credit expansion may be greater than desired by the authorities, given their inflation objectives; massive outflows may require sustained and prohibitively high interest rates, placing additional strains on the banking sector. Further, as the recent Mexican and East Asian experiences vividly illustrate, the reversal of flows can be quite abrupt, threatening the stability of the financial system. Hence, one possible way of simultaneously avoiding some of the problems associated with large destabilizing inflows and even more problematic outflows might be to limit inflows to begin with.

In addition to this "precautionary" motive for restricting capital inflows several arguments have been advanced in favor of controls, particularly when the inflows are perceived to be temporary (see Krugman, 1987). For instance, it has been argued that the temporary real exchange rate appreciation that often accompanies a surge in capital inflows may have adverse long-lived effects on exports - the so-called hysteresis argument. A second argument is that taxation of inflows may be warranted if the capital inflows are purely speculative.

One proposal (see e.g., Eichengreen, Tobin, and Wyplosz, 1995) that has recently gained some popularity is the worldwide implementation of a tax on foreign exchange trading or on short-term cross-border bank loans. Advocates contend that such a tax would give countries increased domestic monetary policy autonomy, raise the costs of speculative attacks on fixed exchange rate regimes, and encourage investors to focus on longer-term investments rather than short-term speculative opportunities. This proposal is a modern vintage of James Tobin's proposal to tax foreign exchange transactions in order to "throw sand in the wheels of international finance." Although there are a number of proposals of this sort that differ by the tax base or tax rate, they all aim to increase the cost of establishing short positions in currencies and thus to make speculators "pay" for their activities. As discussed later, some countries have in fact implemented variants of these types of policies.

There are, however, a number of practical problems with a "Tobin tax" that may significantly limit its appeal (see Garber and Taylor, 1995, and Dooley, 1996). First, to be effective, it would probably need to be adopted worldwide and uniformly; if it were adopted by just the major industrial countries, say, it would likely cause the taxed activities to shift to untaxed countries. Second, penalizing cross-border bank loans may not be very effective in restraining speculative activity if banks do not engage in large position taking.<sup>7</sup> Third, it is becoming increasingly easy to create synthetic positions through derivatives markets, complicating the effective taxation of "foreign exchange transactions." Fourth, taxing foreign exchange trading is likely to remove significant liquidity from these markets. While the first of these may not be very relevant for developing countries where offshore foreign exchange trading may be limited or nonexistent, the remaining concerns are still a factor.

A more general criticism of any type of capital control is provided by the empirical finding that capital controls tend to lose their effectiveness relatively quickly as individuals find ways of dodging the controls.<sup>9</sup> Further, recent research suggests that countries that have capital controls in place often have higher inflation and lower real interest rates than other countries.<sup>10</sup>

<sup>7</sup> The experience of Spain during the 1992 exchange rate mechanism (ERM) crisis highlights the importance of this argument.

<sup>8</sup> See Garber and Lall (Chapter 7) in this volume.

<sup>9</sup> See Mathieson and Rojas-Suarez (1993) for a comprehensive review.

<sup>10</sup> See Grilli and Milesi-Ferretti (1995). One interpretation of this finding is that the controls are just another form of financial repression - the authorities can more effectively tax "captive" domestic currency deposits through higher inflation.

#### 14.2.2. Short-term versus long-term: Is there a difference?

Several countries currently seek to promote long-term capital inflows but to discourage short-term inflows. The motivation for such a policy is presumably that long-term capital inflows take longer to withdraw from a country so that the lower the share of short-term capital in total flows, the lower the probability of a sudden reversal in capital inflows. Further, it is argued that long-term flows, such as foreign direct investment, tend to be more strongly guided by medium-term fundamentals and are less sensitive than short-term flows to cyclical fluctuations in domestic or international interest rates.<sup>11</sup>

In addition to the potential reversibility of inflows, there may be other reasons why the authorities may wish to limit short-term flows. Notably, a surge in short-term inflows often shows up as a rapid increase in short-maturity bank deposits; if the domestic banking sector is inefficient or poorly supervised, the authorities may wish to minimize the role played by banks in intermediating capital flows. In this case, it may be preferable to have a larger share of flows routed through bond and equity markets.<sup>12</sup>

The current practices of several developing countries amount to restricting either the types of external financing of domestic entities or else the maturities of external financing. An example of the former approach is restricting the foreign issuance of securities by domestic entities, thereby encouraging direct investment instead. An example of the latter policy would be to restrict, say via a tax, short-maturity foreign bond issues or bank loans.

Just as there are practical problems associated with designing capital controls to target only inflows or only outflows, it is difficult to design capital controls that distinguish between short-term and long-term capital flows. Specifically, it is often not clear which capital flows are short-term and which are long-term. Standard balance-of-payments classifications - direct investment, portfolio flows, short-term flows, and the like - are in general not very informative as to the volatility, efficiency, maturity, and liquidity of the flows. Indeed, as Claessens, Dooley, and Warner (1995) suggest, the distinctiveness of these flows may be significantly less clear than these categories suggest. Furthermore, it seems likely that even if a set of controls is effective in limiting short-term flows for

financially, if incentives are strong enough, even flows that are perceived by policymakers to be "long-term" flows may in fact be considerably more harmful. For example, selling direct investments may require time and significant transactions costs; but it is possible to create a "synthetic" flow by obtaining bank loans in the domestic currency that can be liquidated rather quickly and with low transactions costs. In addition, to the extent that equity and long-term bonds - and, to a much lesser degree, term deposits and bank loans - have reasonably liquid secondary markets, asset sales by foreigners can be expected to require an adjustment in the secondary market, rather than an adjustment in the primary market as is the case when short-term flows dry up. Because large-scale liquidation of "long-term" securities (equity, long-term bonds) may well spill over to primary markets, it is not clear that this sort of policy would be effective precisely at those times when it would be beneficial. Indeed, the sell-off in late 1994 and early 1995 of emerging-market securities not only reduced securities prices, but it also sharply contracted issuance activity in primary securities markets by most developing countries.

#### 14.2.3 Taxing short-term flows in the 1990s: The measures

The preceding discussion suggests that one policy to reduce net inflows directly is the taxation of gross inflows, possibly in the form of a tax that falls more heavily on short-term inflows. The policies adopted by Chile in 1991, Colombia in 1993, and Thailand in 1995-96 (see Tables 14.1 and 14.2) are recent examples of this type of policy. In these cases, a nonremunerated reserve requirement is to be deposited at the central bank on liabilities in foreign currency associated with direct borrowing by firms. In the case of Colombia, the reserve requirement is to be maintained for the duration of the loan and applies to all loans with a maturity of five years or less, except for trade credit with a maturity of four months or less. The percentage of the requirement declines as the maturity lengthens; from 140 percent for funds that are thirty days or less to 42.8 percent for five-year funds. For Chile, the tax is of the form of a nonremunerated 30 percent reserve requirement to be deposited at the central bank for a period of one year on liabilities in foreign currency associated with direct borrowing by firms. The tax rate for various maturities is summarized in Table 14.3 and highlights how such a measure may act as a disincentive to borrow abroad, particularly at short maturities - that is, the tax is borne by the borrower. The table also highlights how high the tax rates are at short maturities, possibly suggesting that the authorities believed lower tax rates would not have been a

<sup>11</sup> See Edwards (1991).  
<sup>12</sup> This argument is reinforced by the fact that most countries view stability and sovereignty of the banking system as a much more important consideration than weakness in equity markets.

Table 14.1. *Restrictions on inflows and prudential requirements: Asia**Indonesia (1990)*

March 1991

Central Bank adopts measures to discourage offshore borrowing. Bank Indonesia begins to scale down its swap operations by reducing individual banks' limits from 25 to 20 percent of capital. The three-month swap premium was raised by 5 percentage points.

October 1991

All state-related offshore commercial borrowing was made subject to prior approval by the government and annual ceilings were set for new commitments over the next five years.

November 1991

Further measures are taken to discourage offshore borrowing. The limits on banks' net open-market foreign-exchange positions were tightened by placing a separate limit on off-balance-sheet positions.

Bank Indonesia also announced that future swap operations (except for "investment swaps" with maturities of more than two years) would be undertaken only at the initiative of Bank Indonesia.

*Malaysia (1989)*

June 1, 1992

Limits on non-trade-related swap transactions were imposed on commercial banks.

January 17, 1994-August 1994

Banks were subject to a ceiling on their non-trade- or non-investment-related external liabilities.

January 24, 1994-August 1994

Residents were prohibited from selling short-term monetary instruments to nonresidents.

February 2, 1994-August 1994

Commercial banks were required to place with Bank Negara the net funds of foreign banking institutions (Vostro accounts) held in non-interest-bearing accounts. However, in the January-May period these accounts were considered part of the eligible liabilities base for the calculation of required reserves, resulting in a negative effective interest rate on Vostro balances.

February 23, 1994-August 1994

Commercial banks are not allowed to undertake non-trade-related swap and outright forward transactions on the bid side with foreign customers.

*Philippines (1992)*

July 1994

Bangko Central begins to discourage forward cover arrangements with nonresident financial institutions.

Table 14.1. (cont.)

*Thailand (1988)*

January 1990

Banks and finance companies net foreign exchange positions may not exceed 20 percent of capital.

Banks and finance companies net foreign liabilities may not exceed 20 percent of capital.

Residents are not allowed to hold foreign currency deposits except only for trade-related purposes.

April 1990

Banks and finance companies net foreign-exchange positions limit raised to 25 percent of capital.

August 8, 1995

Reserve requirements, to be held in the form of non-interest-bearing deposits at the Bank of Thailand, on short-term nonresident baht accounts were raised from 2 to 7 percent. While reserve requirements on domestic deposits are also 7 percent, up to 5 percent can be held in the form of interest-bearing public bonds.

December 1995

The 7 percent reserve requirement is extended to finance companies short-term (less than one year) promissory notes held by nonresidents.

A variety of measures aimed at reducing foreign-financed lending were introduced.

April 19, 1996

Offshore borrowing with maturities of less than 1 year by commercial banks, finance companies, and finance and security companies will be subject to a 7 percent minimum reserve requirement in the form of a nonremunerated deposit with the Bank of Thailand. Loans for trade purposes will be exempt.

;;Vote: The date next to the country name denotes the first year of the surge in inflows.

Sources: Alfiler (1995), Bank Indonesia, *Annual Report*, various issues; Bank Negara, *Annual Report*, various issues; Bank of Thailand, *Annual Report*, various issues.

~ffic~e~t disincentive - an issue that will be taken up in the next section. In principle, because of their breadth, these measures affect the household sector, nonfinancial businesses, as well as the financial sector. In practice, it has mainly served as a deterrent for the banking system to borrow offshore.

More recently, Brazil has implemented a variety of taxes and mea-

Table 14.2. *Restrictions on inflows and prudential requirements: Eastern Europe and Latin America*

*Brazil (1992)*

October 1994  
A 1 percent tax on foreign investment in the stock market. Eliminated on March 10, 1995.  
The tax on Brazilian companies issuing bonds overseas was raised from 3 to 7 percent of the total. Eliminated on March 10, 1995.  
The tax paid by foreigners on fixed-interest investments in Brazil was raised from 5 to 9 percent. Reduced back to 5 percent on March 10, 1995.  
The Central Bank raised limits on the amount of dollars that can be bought on foreign exchange markets.

*Chile (1990)*

June 1991  
Nonremunerated 20 percent reserve requirement to be deposited at the Central Bank for a period of one year on liabilities in foreign currency for direct borrowing by firms.  
The stamp tax of 1.2 percent a year (previously paid by domestic currency credits only) was applied to foreign loans as well. This requirement applies to all credits during their first year, with the exception of trade loans.

May 1992

The reserve requirement on liabilities in foreign currency for direct borrowing by firms is raised to 30 percent. Hence, all foreign currency liabilities have a common reserve requirement.

*Colombia (1991)*

June 1991  
A 3 percent withholding tax on foreign exchange receipts from personal services rendered abroad and other transfers, which could be claimed as credit against income tax liability.

February 1992  
Banco de la Republica increases its commission on its purchases of foreign exchange from 1.5 to 5 percent.

June 1992  
Regulation of the entry of foreign currency as payment for services.

September 1993  
A nonremunerated 47 percent reserve requirement to be deposited at the Central Bank on liabilities in foreign currency for direct borrowing of the firms. The reserve requirement is to be maintained for trade credit, except for trade credit.  
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Table 14.2. (cont.)

August 1994

Nonremunerated reserve requirement to be deposited at the Central Bank on liabilities in foreign currency for direct borrowing by firms. The reserve requirement is to be maintained for the duration of the loan and applies to all loans with a maturity of five years or less, except for trade credit with a maturity of four months or less. The percentage of the requirement declines as the maturity lengthens, from 140 percent for funds that are 30 days or less to 42.8 percent for five-year funds.

*Czech Republic (1992)*

April 1995

The central bank introduced a fee of 0.25 percent on its foreign exchange transactions with banks, with the aim of discouraging short-term speculative flows.

August 1, 1995

A limit on net short-term (less than one year) foreign borrowing by banks is introduced.

Each bank is to ensure that its net short-term liabilities to nonresidents, in all currencies, do not exceed the smaller of 30 percent of claims on nonresidents or Kc 500 million.

Administrative approval procedures seek to slow down short-term borrowing by nonbanks.

*Mexico (1990)*

April 1992

A regulation that limited foreign currency liabilities of commercial banks to 10 percent of their total loan portfolio was passed. Banks had to place 15 percent of these liabilities in highly liquid instruments.

*Note:* The date next to the country name denotes the first year of the surge in inflows.

*Sources:* Annual reports of Banco Central de Chile (1991 and 1992), Banco de la Republica, Colombia (1993 and 1994), Banco de Mexico (1992), and Conselho Monetario Nacional, Brasil (1994 and 1995).

sure on inflows (Table 14.2), with greater variation across assets as well as across maturities.<sup>13</sup> As in the cases of Chile and Colombia, the tax on foreign issuance of bonds falls on the borrower. However, some other taxes are paid by foreign lenders. Notably, foreigners investing in the

<sup>13</sup> As capital inflows shrank in the wake of the Mexican crisis, Brazil eased or eliminated some restrictions on inflows in March 1995. For a detailed summary of all the measures taken since 1993, see Garcia and Barcinski (1996).



Table 14.3. Tax rate on short-term capital inflows according to maturity (in percent)

Number of months	Chile	Colombia
1	95	140
2	90	137
3	74	135
4	67	132
5	61	129
6	55	127
7	50	123
8	45	122
9	41	119
10	37	117
11	33	115
12	30	112
13	27	110
14	25	108
15	22	106
16	20	104
17	18	102
18	16	100
19	15	98
20	13	96
21	12	94
22	11	92
23	10	90
24	9	88
25	8	86
26	7	85
27	7	83
28	6	80
29	5	78
30	5	77
31	4	75
32	4	73
33	4	74
34	3	72
35	3	71
36	3	69
48	1	56
60	0	43

Sources: Banco de Chile, *Annual Report* (1992) a-d  
Banco de la República, *Annual Report*, Colombia  
(1994).

stock market have to pay a 1 percent tax *up front*.<sup>14</sup> Hence the tax falls more heavily on active investors who trade more often and hold equity for only relatively short periods of time, but falls less heavily on more passive "buy and hold" investors. Hence, these measures are designed to target the speculative, "hot money" variety of capital inflows. The tax to be paid by foreigners on fixed-income investments has similar characteristics.

The main disadvantage with these measures is that flows are likely to be rerouted through other channels - for example, the over- or underinvoicing of imports and exports so long as trade credits are exempt from the tax (see Mathieson and Rojas-Suarez, 1993). Laban and Larrafn (1994) have argued that, in the case of Chile, overinvoicing of imports is not likely to be an attractive alternative since imports are taxed at a comparable rate.<sup>15</sup> Indeed, as discussed in detail later, inflows to Chile in 1991 were below those observed in 1990, possibly attesting to the success of this policy. While net inflows increased, once again, in 1992 and subsequently, the increases came primarily in foreign direct investment and other long-term flows. A similar pattern emerges in Colombia during 1994, with short-term flows accounting for a declining share of total flows.<sup>16</sup>

In other instances, capital controls have been quantitative in nature (Tables 14.1 and 14.2). Measures implemented have included prudential limits, or prohibition, on non-trade-related swap activities, offshore borrowing, banks' net foreign exchange positions (Czech Republic, Indonesia, Malaysia, Philippines, Thailand), caps on banks' foreign currency liabilities (Mexico), and even blanket measures that prohibited domestic residents from selling short-term money market instruments to foreigners (Malaysia).

In the case of Malaysia, wide domestic-foreign interest rate differentials in tandem with widespread expectation of an appreciation of the ringgit during the late 1993 led to a surge in short-term capital inflows, which culminated with the imposition of six measures to restrict inflows in January 1994 (Table 14.1). The inflows came in the form of a marked rise in short-term bank deposits, which were seen by policy makers as speculative in nature.<sup>17</sup> Consequently, most of the measures were

<sup>14</sup> This was eliminated on March 10, 1995, in order to encourage inflows in the wake of the Mexican crisis.

<sup>15</sup> However, some circumvention of the tax is effected by reclassifying loans as trade-related.

<sup>16</sup> However, total inflows to Colombia continued to increase in 1994.

<sup>17</sup> See Aziz (1995).

directed toward the control of the activities of financial sector participants and most were announced to be temporary.<sup>18</sup> The most successful measure in reducing short-term inflows was apparently the measure that prohibited domestic residents from selling short-term money market instruments to foreigners; as the certificates of deposits (CDs) matured and could not be rolled over, short-term inflows (and the monetary aggregates) began to shrink. However, if such policies are maintained indefinitely they will likely reduce the competitiveness and retard the development of the financial sector.<sup>19</sup> As far as a foreign investor is concerned, the cost of this particular measure would be the forgone return from not being able to roll over CDs. In practice, this opportunity cost does not appear substantial since in 1994 Malaysian short-term interest rates were close to world levels.

In April 1992, Mexico passed a regulation that limited foreign currency liabilities of commercial banks to 10 percent of their total loan portfolio. However, it is not clear to what extent this measure acted to reduce the size of the capital inflows, since banks' total loan portfolios had been expanding rapidly throughout that period and the initial share of loans in foreign currency was below the 10 percent limit. For example, during 1992 bank assets grew by 41 percent while foreign currency loans grew by 88 percent; a similar pattern emerges in 1993, with foreign currency loans increasing by 50 percent while total loans rose by 25 percent. Indeed, the constraint only appears to have become binding in 1994 when total and foreign currency loans both rose by 27 percent.

### 14.3 The model

The model we study is a standard, infinite horizon, representative agent cash-in-advance model with two goods - a traded good and a nontraded good. Reinhart and Smith (1996) study this model in detail, and thus in what follows we only briefly review the model and illustrate a few of its key qualitative predictions. The "home country" is a small open economy facing a constant world real interest rate of  $r > 0$  each period. The representative agent in the home country has preferences:

$$\int_0^{\infty} e^{-\beta t} U(C_t, C_t^*) dt, \quad (1)$$

where  $c_t$  and  $c_t^*$  denote consumption of the nontraded and traded goods respectively,  $\beta = r$  is the subjective discount rate, and  $U(C_t, C_t^*)$  is strictly

<sup>18</sup> Only two measures (of the original six) remained in place.

<sup>19</sup> Malaysia removed most capital controls during the second half of 1994.

concave, increasing in each of its arguments, and is twice continuously differentiable.

There is free trade in goods, and the world price of the traded good in units of foreign currency is constant and is denoted  $P^*$ . The home country currency price of the nontraded good is denoted  $P^*$  and the home country currency price of a unit of foreign currency is denoted  $E_t$ . The real exchange rate is therefore  $e_t = E_t P^* / P_t$ . We assume that the nominal exchange rate depreciates at rate  $E \geq 0$ .

There are three assets available to home country residents: the domestic currency (which is not held by foreigners); foreign bonds, which yield an instantaneous return of  $1+r$  per unit invested, expressed in units of the traded good; and one-period bonds issued by home country entities, which yield an instantaneous return of  $1+P_t$  per unit invested (also in terms of the traded good).

The representative agent in the home country receives an endowment of nontraded and traded goods each period equal to  $y$  and  $y^*$  respectively. Let  $a_t = m_t - b_t$  denote the representative agent's real wealth at  $t$ , where  $m_t$  is real cash balances and  $b_t$  is the level of indebtedness. The budget constraint is therefore:

$$\dot{a}_t = \frac{y}{e_t} + y^* - \frac{C_t}{e_t} - C_t^* - \rho_t b_t - \epsilon m_t + \tau_t. \quad (2)$$

Here,  $\tau_t$  is lump-sum transfers from the government. The appropriate interest rate in formulating this budget constraint is the domestic real rate  $P_t$  because we are interested only in restrictions on capital inflows, and thus  $P_t \geq r$ .

Money is valued in this economy because it is useful for making transactions. Formally, the representative agent's consumption purchases must satisfy a cash-in-advance constraint:

$$m_t \geq a(C_t; + C_t/e_t), \quad (3)$$

where  $a$  is a positive constant. It is well known that expression (3) holds as an equality if the nominal interest rate is positive; our assumptions on the rate of depreciation of the nominal exchange rate ( $E \geq 0$ ) and the positive world real interest rate will ensure this is always true.

To motivate our study of taxes on capital inflows, it is convenient to assume that the representative agent has an initial level of indebtedness:  $b_0 > 0$ . For simplicity, let  $b_0 = m_0$  so that  $a_0 = 0$ . With these assumptions, the budget constraint can be written:

$$\int_0^\infty D_t \left( \frac{C_t}{e_t} + C_t^* \right) (1 + \alpha_i) dt = \int_0^\infty D_t \left( \frac{y}{e_t} + y^* + \tau_t \right) dt, \tag{4}$$

where

$$D_t = \exp\left(-\int_0^t \rho_s ds\right). \tag{5}$$

Home country residents therefore seek to maximize (1) subject to (4).

The consolidated budget constraint of the government-central bank in the home country is:

$$\dot{f}_t = r f_t + \epsilon m_t + \dot{m}_t - \tau_t + \gamma_t \rho_t I_t. \tag{6}$$

Here,  $f_t$  is foreign exchange reserves (foreign bonds), and the final term on the right side is the revenues from taxing capital inflows,  $I_t$ . If there are outflows of capital, then  $I_t = 0$ . It simplifies the exposition to assume that the tax base is the net interest payments: an interest payment to a foreigner of  $\rho_t f_t$  causes the foreigner to incur a tax liability of  $\gamma_t \rho_t f_t$ , where  $\gamma_t \in [0, 1]$ . The choice of tax base is of no material consequence for the results. Our focus is on situations in which these taxes are only temporary - they are levied during the interval of time  $[0, T]$  for  $T > 0$ . We assume that  $\gamma_t = 0$  for  $t > T$ , and thus net revenue from seigniorage and from taxing capital inflows is rebated lump-sum to residents in the home country.

Note that in equilibrium  $\rho_t = r/(1 - \gamma)$  so long as inflows are positive,  $I_t = b_t > 0$ . This is true because a foreign investor receives a net return of  $(1 - \gamma)\rho_t$  per unit invested in home country bonds, and thus if foreign investors are going to want to purchase home country bonds, these bonds would have to offer a rate of return that is at least as attractive as the return on foreign bonds:  $\rho_t = r/(1 - \gamma)$  so long as  $b_t > 0$ . It is possible that, at some date,  $b_t < 0$ , and thus there are capital outflows. In that case, taxes on inflows have no effect on domestic interest rates, and  $\rho_t = r$ .

The equilibrium conditions for the nontraded goods market, the money market, and the traded goods sector respectively are:

$$C_t = y, \tag{7}$$

$$m_t = m_t^s, \tag{8}$$

$$\int_0^\infty e^{-rt} C_t^* dt = \frac{y^*}{r} - b_0. \tag{9}$$

In the case of free capital mobility and no taxes on inflows we have  $\rho_t = r$  for all  $t$ . Thus, if  $q_t$  denotes the Lagrange multiplier on the constraint, the first-order conditions associated with optimal consumption of traded and nontraded goods respectively are:

$$U_{c_t}(C_t, C_t^*) = q_t(1 + \alpha_i), \tag{10}$$

$$U_{C_t^*}(C_t, C_t^*) = \frac{q_t(1 + \alpha_i)}{c_t}. \tag{11}$$

Equilibrium consumption of nontraded and traded goods are therefore  $C_t = y$  and  $C_t^* = y^* - r b_0$ . Finally, the equilibrium real exchange rate is constant and equal to:

$$\frac{U_{C_t^*}(y, y^* - r b_0)}{U_{c_t}(y, y^* - r b_0)}. \tag{12}$$

14.3.1 Taxing capital inflows

The first-order conditions for the representative agent in the home country when there are controls on capital inflows are:

$$U_{c_t}(C_t, C_t^*) = \exp\left(-\int_0^t (\rho_s - t_3) ds\right) q_t(1 + \alpha_i), \tag{13}$$

$$U_{C_t^*}(C_t, C_t^*) = \exp\left(-\int_0^t (\rho_s - t_3) ds\right) q_t(1 + \alpha_i) / c_t, \tag{14}$$

where  $q_t$  is the Lagrange multiplier on the constraint. For exposition purposes we assume that  $\gamma_t = \gamma$  for all  $t \in [0, T]$ . Suppose that the domestic interest rate is bid up to its maximum possible equilibrium value at  $t = 0$ ,  $\rho_0 = r/(1 - \gamma)$ , and that at this interest rate  $b_0 > 0$ . It follows that the domestic interest rate will also be bid up to this level at all future dates prior to the removal of capital controls so long as  $b_t > 0$  at each date. Let  $t^* > T$  denote a future date for which  $b_t > 0$  for all  $t < t^*$ . Thus,  $\rho_t = r/(1 - \gamma)$  for all  $t < t^*$ . It follows that, for all  $0 < t < t^*$ , we can write:

$$U_{C_t^*}(y, C_t^*) = \varphi \left( 1 + \alpha \left( \frac{r}{1 - \gamma} + \epsilon \right) \right) \exp\left(-\frac{\gamma r}{1 - \gamma} t\right). \tag{15}$$

<sup>20</sup> Reinhart and Smith (1996) discuss the general case.

Hence, the marginal utility of consumption of traded goods is declining over the interval  $(0, t^*)$ , and thus the consumption of traded goods is increasing over this time interval. But note that at date  $t = 0$ , the level of consumption jumps downward to accommodate a jump in saving, so this increasing rate of consumption over the time interval  $(0, t^*)$  begins from a lower initial level of consumption. The real exchange rate,  $e_t = U_c(y, e_n / u_c(y, q))$ , must also depreciate initially and then subsequently appreciate over the interval  $(0, t^*)$ .

At  $t = 0$ , the imposition of controls on capital inflows causes the real and the nominal interest rate to jump immediately upward in order to either attract foreign capital or to entice residents to substitute out of current consumption and therefore finance domestic credit needs. After this initial impact effect, the real interest rate remains higher than the world interest rate because the home country still must attract foreign capital, but the higher interest rate continues to encourage saving in the home country. The higher real interest rate is therefore encouraging residents to substitute consumption intertemporally, which explains the upward sloping consumption path. However, if at some date  $t^*$  domestic savings satisfy  $b_t = 0$ , then foreign capital is not required to finance domestic consumption and thus the real interest rate would fall to  $P_t = r$  after this point is reached. Of course, if capital controls are removed before  $b_t$  is reduced to zero, then the real interest rate would fall to  $r$  at date  $T$  as foreign capital could finance the amount  $b_T > 0$  at the world real interest rate. In either case, the level of consumption after  $t^*$  or  $T$  (whichever comes first) is permanently higher than before the capital controls were imposed because the tax liability associated with the public debt is lower. Consequently, the imposition of a tax on capital inflows initially causes a real exchange rate depreciation, and then the real exchange rate appreciates to a level above its level before the tax was imposed.

Taxes on capital inflows are often implemented with the aim of changing the maturity of composition of capital inflows. In particular, levying taxes on short-term capital inflows are often implemented with the intention of lengthening the maturity composition of inflows. In our simple model without capital flow restrictions, different maturities are perfect substitutes to investors because there is a perfectly liquid secondary market and there is no uncertainty. Thus, if we assumed that outstanding debt could be refinanced costlessly in different maturities, then any tax on short-term capital inflows would have no important effect in this model other than to shift the maturity composition of debt, as foreigners would undercut higher short-term interest rates by offering to lend funds long-term at lower per-period rates.

#### 14.4 Some stylized facts

Many case studies have recently examined the role played by capital controls in managing the surge in capital inflows during the early 1990s.<sup>21</sup> However, there has been little effort to systematically examine the "stylized facts" before and after the controls are introduced for those countries implementing these measures. In this section we consider five episodes in which capital controls on inflows were introduced during the 1990s: Chile (June 1991), Colombia (September 1993), Malaysia (January 1994), Brazil (October 1994), and the Czech Republic (August 1995). Although, as shown in Tables 14.1 and 14.2, other countries have adopted numerous "prudential" measures, these five constitute the major and most unambiguous cases of the use of capital controls to curb short-term inflows. Thailand's measures in late 1995 and early 1996 are another important case, but the recentness of many of the stiffer measures makes it difficult to obtain sufficient data to analyze the consequences of the controls. However, events in 1997 in Thailand highlight that the controls were not successful in preventing a Mexico-style currency and banking crisis.

In what follows, we examine the evolution of the capital account and its composition as well as the behavior of key macroeconomic variables, which, as shown in the previous section, should be influenced by the controls. Of course, any assessment of the impact of the capital account measures has to be tempered by the fact that we do not observe the counterfactual—that is, what capital flows and the macroeconomic environment would have been in the absence of the controls.

##### 14.4.1 The volume and composition of capital flows

Table 14.4 summarizes capital account developments around the time capital controls are introduced (denoted in the table by  $t$ ). We can make the following observations based on these recent experiences with policies directed toward curbing short-term capital inflows.

First, reviewing the Chilean and Malaysian experiences (and, to a lesser extent, the Czech case) at least in the short run, these distinctly different policies were successful in reducing the *volume* of inflows in a relatively brief period of time. Indeed, in the case of Chile and Malaysia the capital account surpluses (as a percent of GDP) shrank by 7.6 and

<sup>21</sup> For a comparison of Chile and Colombia, see Lefort and Budnevich (1996); Lagan and Larrafn (1994) examine the Chilean experience; and Garcia and Barcinski (1996) describe the Brazilian experience.

Table 14.4. *Capital account developments*

	<i>t</i> - 1	<i>t</i>	<i>t</i> + 1	<i>t</i> + 2
<i>Capital account balance (as % of GDP)</i>				
Brazil (August 1994)	2.4	2.5	4.7	n.a.
Chile (June 1991)	10.0	2.4	6.8	6.1
Colombia (September 1993)	0.3	4.7	4.4	5.5
Czech Republic (August 1995)	6.6	16.7	14.2	n.a.
Malaysia (January 1994)	17.2	2.1	7.9	n.a.
<i>Direct investment (as % of GDP)</i>				
Brazil	-0.1	0.2	0.4	n.a.
Chile	0.8	1.3	0.8	0.8
Colombia	1.4	1.3	2.2	2.7
Czech Republic	2.1	5.3	2.9	n.a.
Malaysia	5.2	3.5	4.7	n.a.
<i>Short-term capital flows (as % of GDP)</i>				
Brazil	0.2	-0.1	1.3	n.a.
Chile	3.2	-0.7	3.8	1.6
Colombia	0.6	1.1	0.7	0.3
Czech Republic	0.1	0.7	1.7	n.a.
Malaysia	8.6	-4.6	-0.7	n.a.
<i>Change in international reserves (in billions of US\$)</i>				
Brazil	8.1	6.5	12.6	n.a.
Chile	2.4	1.0	2.1	0.5
Colombia	1.4	0.7	0.2	0.4
Czech Republic	2.4	7.7	-1.3	n.a.
Malaysia	10.0	-1.8	-1.6	n.a.
<i>Portfolio flows (as % of GDP)</i>				
Brazil	1.6	1.3	2.1	n.a.
Chile	1.2	0.1	0.8	1.8

Notes: *t* - 1 refers to the year before the capital controls are introduced. The dates in parentheses indicate when the controls were introduced. See Tables 14.1 and 14.2 for details on the measures. An n.a. denotes the pertinent data were not yet available.

Sources: International Monetary Fund, *World Economic Outlook*, various issues.

15.1 percentage points, respectively, in the year the controls were introduced. In the case of the Czech Republic, the decline in inflows was more modest (3.5 percent) and was not apparent until 1996 (*t* + 1), as the inflows were introduced in the latter half of 1995. No decline in the volume of flows is apparent in the Colombian and Brazilian cases.

Second, it could be argued that the effect these policies had on the *composition* of flows was the "desired" effect of lengthening maturities in the cases of Chile, Colombia, and Malaysia, where a marked decline in capital inflows occurred at the short maturities. As the third panel of Table 14.4 highlights, in these three cases the decline in inflows was concentrated in the short-term maturities that were targeted by the measures. Brazilian measures, on the other hand, primarily targeted portfolio flows - and, as Garcia and Barcinski (1996) argue, these do not appear to have much success in reducing these inflows (see bottom panel of Table 14.4).

Third, in four of the five cases (Brazil is the exception) reserve accumulation slowed following the introduction of the measures, suggesting that either the pressures to intervene in the foreign exchange market had diminished (as inflows eased); the central banks had opted to allow the exchange rate to adjust more freely, so as to reduce the scope of costly sterilized intervention policies (an issue that will be discussed later); or a combination of these developments.

Fourth, if the inflows are largely seen as a temporary phenomenon, such policies appear to be quite effective (as least when complemented by a reinforcing monetary policy stance, an issue to be discussed). However, it is not possible from these experiences to draw any inference about the usefulness of the controls if the inflows persist over longer periods of time or if the policies remain in place indefinitely. In Malaysia the controls were subsequently removed, while in the case of Colombia these measures have been eased; in the case of Chile there is much debate over whether the reserve requirement and other measures have become less binding; and in the cases of the Czech Republic and Thailand the measures are recent. Lastly, in the Brazilian case it appears that the measures were not particularly effective, even in the short run.

#### 14.4.2 Monetary policy and capital controls

Besides a desire to affect capital flows, a motivation for introducing controls is that it permits the central bank (at least in the short run) a greater degree of monetary policy independence, even with a relatively rigid exchange rate regime (see Laban and Larrafn, 1994). Hence, in

Table 14.5. *Monetary and exchange rate policy indicators*

	<i>t</i> - 1	<i>t</i>	<i>t</i> + 1	<i>t</i> + 2
<i>Real ex-post lending interest rates (% per annum)</i>				
Brazil (August 1994)	7.1	21.1	26.0	10.6
Chile (June 1991)	22.0	11.2	10.6	11.0
Colombia (September 1993)	8.1	10.7	13.5	17.9
Czech Republic (August 1995)	3.0	3.7	4.4	n.a.
Malaysia (January 1994)	8.0	2.6	2.0	n.a.
<i>Money and quasi money (% change, period end)</i>				
Brazil	2,652.0	1,081.8	43.4	n.a.
Chile	23.6	28.1	23.3	23.4
Colombia	37.4	30.8	33.3	27.6
Czech Republic	20.4	29.3	6.2	n.a.
Malaysia	26.6	12.7	19.9	n.a.
<i>Nominal exchange rate (% change, period end)</i>				
Brazil				n.a.
Chile	13.4	11.1	2.0	12.1
Colombia	14.8	13.0	-11.3	21.4
Czech Republic	-6.5	-5.2	3.8	n.a.
Malaysia	3.4	-5.3	-0.7	n.a.

Notes: *t* - 1 refers to the year before the capital controls are introduced. The dates in parentheses indicate when the controls were introduced. See Tables 14.1 and 14.2 for details on the measures. An n.a. denotes the pertinent data were not yet available.

Sources: International Monetary Fund, *World Economic Outlook*, various issues.

examining the effectiveness of the capital controls it is important to assess what the course of monetary policy was during that period.

As the top panel of Table 14.5 highlights, an important determinant of the relative success of the capital account measures appears to be the stance adopted by monetary policy at the time of the introduction of controls, and in the period immediately following their introduction. Specifically, in the most "successful" cases (Chile and Malaysia), aggressive sterilized intervention policies were abandoned when the controls were introduced allowing domestic nominal and real interest rates to fall sharply (see Reinhart and Dunaway, 1995). The decline in domestic rates of return further reduced the attractiveness of domestic financial assets and reinforced the aims of the capital controls. In the two intermediate

cases (Colombia and the Czech Republic), where the decline in inflows were either more modest, or the only effects were to alter the composition of flows, monetary policy remained relatively neutral and real interest rates rose modestly (as suggested by the theoretical model outlined in the previous section). Note also that the slowing of reserve accumulation in these countries may also have tempered the rise in interest rates by reducing the impact of the controls on capital flows. However, in the case of Brazil - where capital account measures appear to be least successful in either discouraging inflows or altering their composition - a dramatic tightening in monetary policy accompanied the controls. Aggressive sterilization through open-market operations led to a substantial buildup of domestic debt (see Garcia and Barcinski, 1996), and marked increases in reserve requirements (see Reinhart and Reinhart, 1995) drove the lending rate substantially higher. The outcome of these policies was reflected in a sharp increase in real interest rates, which still remain above 20 percent (see Table 14.5). In turn, the high real interest rates have fostered capital inflows, as rates of return remain quite attractive by international standards, even on an after-tax basis. In effect, as shown in Table 14.4, the surge in inflows was led by portfolio investments - a large share of which was funneled into the domestic fixed-income market.

With regard to monetary growth, despite an easing in monetary policy in Chile and Malaysia and neutral policies in Colombia and the Czech Republic, the tendency in the growth rates of the monetary aggregates following the introduction of controls appears to be toward a deceleration (Table 14.5). The tendency toward slower monetary growth does not, however, appear to be a product of a weaker demand for money due to lower economic activity (discussed later). Instead, it appears to reflect either a slowdown in nonresident banking sector deposits (most notably in Malaysia), less offshore borrowing by domestic banks (Chile and Colombia), or a slowing in foreign exchange reserve accumulation by the central bank. In any case, it has usually been part of the objective of the central banks for either prudential reasons (i.e., concerns about an unstable deposit base fueling a boom in bank lending) or for macroeconomic reasons (e.g., limiting inflationary pressures).

#### 14.4.3 *Capital controls and selected macroeconomic indicators*

As noted earlier, examining the links between capital controls and macroeconomic developments is complicated by the lack of information on how the economy would have fared in the absence of controls. However, a perusal of the indicators presented in Table 14.6 does not high-

Table 14.6. Selected macroeconomic indicators

	<i>t-1</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>
<i>Current account balance (as % of GDP)</i>				
Brazil (August 1994)	-0.2	-0.3	-2.7	n.a.
Chile (June 1991)	-1.8	0.3	-1.6	-4.6
Colombia (September 1993)	1.8	-3.8	-4.5	-5.3
Czech Republic (August 1995)	-0.1	-4.2	-4.5	n.a.
Malaysia (January 1994)	-4.6	-5.9	-8.5	n.a.
<i>Real GDP (% change)</i>				
Brazil	4.2	5.8	4.2	n.a.
Chile	3.3	7.3	11.0	6.3
Colombia	4.0	5.2	5.7	5.3
Czech Republic	2.6	4.8	5.2	n.a.
Malaysia	8.3	9.2	9.6	n.a.
<i>Real consumer spending (% change)</i>				
Brazil	5.9	8.2	8.6	n.a.
Chile	0.4	8.9	11.6	8.1
Colombia	-0.1	5.2	5.6	3.0
Czech Republic	5.4	6.0	6.6	n.a.
Malaysia	5.3	7.0	13.7	n.a.
<i>Real exchange rate (% change)</i>				
Brazil	11.9	34.1	n.a.	n.a.
Chile	-2.6	5.4	10.7	-2.1
Colombia	9.1	5.1	11.9	1.1
Czech Republic	n.a.	n.a.	n.a.	n.a.
Malaysia	-0.4	-3.2	0.4	n.a.

Notes: *t-1* refers to the year before the capital controls are introduced. The dates in parentheses denote when the major controls were introduced. See Tables 14.1 and 14.2 for details on the measures. An n.a. denotes the pertinent data were not yet available.

Sources: International Monetary Fund, *World Economic Outlook*, various issues.

light any substantive countercyclical effects of the capital controls on many key macroeconomic indicators. Indeed, it is hard to detect that data the temporary contraction in consumption, the real exchange rate depreciation, and the narrowing current account deficit postulated by the theoretical model of the previous section. The current account sur-

continued to deteriorate, as consumption and real GDP growth continued to expand briskly. This observation confirms that the reduced capital account surplus is, at least initially, associated with a slowing in central bank reserve accumulation and not a swift shift in trade in goods and services. As to the real exchange rate, the picture is mixed. In some countries the introduction of controls was followed by a period of moderating real exchange rate appreciations (or a depreciation) while in others the tendency to appreciate remained unabated.

The insensitivity of consumption, the real exchange rate, and the current account surplus in the face of controls on capital inflows should not be particularly surprising for the following reason. Specifically, the weak response of these variables is precisely the prediction of the theoretical model already studied when the intertemporal elasticity of substitution in consumption is small. Ostry and Reinhart (1992) and Reinhart and Vegh (1995) find that these elasticities are indeed very low for developing countries. Reinhart and Smith (1996) use the model sketched previously to show that for reasonable elasticities of substitution, significant responses in consumption, the current account, and the real exchange rate would require enormous changes in real interest rates induced by very high tax rates on capital inflows. Moreover, many countries appear to have used official reserves to buffer the impact of the controls and this would further weaken the link between controls and these macroeconomic variables.

#### 14.5 Conclusion

In light of the recent experiences of countries that have adopted measures designed to curb short-term capital inflows, it appears that, at least in the short run, such policies are effective in either reducing the volume of capital inflows, affecting their composition, or both, in a relatively brief period of time. Hence, it could be argued that if the capital inflows are perceived as temporary, such policies could be effective, although the evidence reviewed here suggests those measures may be more effective in shaping the composition of flows than in reducing their overall volume. This is especially true insofar as by reducing the volume of net inflows they reduce potential future outflows and the economic costs of such turbulence. Of course, the longer the inflows persist or the longer the policies remain in place, the greater the chances that the controls become ineffective.

Most of the empirical work on the effectiveness of capital controls has tended to conclude that controls lose their effectiveness relatively quickly. However, in most of this work no distinctions are made among

the "types" of capital controls. Specifically, little distinction is made between measures to discourage inflows and controls on outflows. Indeed, there may be reasons to believe that their "lack of effectiveness" is not symmetric and that controls on inflows may be more effective than controls on outflows. Such differences may have little to do with the design of the measures per se and have more to do with incentives to circumvent the controls.

Controls on outflows are usually resorted to during balance-of-payments or financial crises. These episodes are characterized by large devaluations of the exchange rate, steep declines in the stock market, increased volatility in financial variables, a higher risk of default, and, in some cases, political instability. The imposition of controls, in and of itself, may send a "signal" that worse times are to come. In such circumstances, domestic-foreign interest rate spreads usually reach levels (particularly on a risk-adjusted basis) that provide a powerful incentive to evade the controls. In contrast, as the experiences of several countries in the early 1990s show, controls on inflows tend to emerge under more "normal" economic circumstances. While rate-of-return spreads may still provide an incentive to evade the controls, the rate-of-return differentials tend to be smaller than those observed during crises, and hence the desire to circumvent them may not be as great. Moreover, from the viewpoint of an international investor, one can always redirect investments to countries where there are fewer impediments.

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